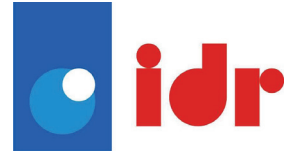


# How has Spain become a leader in the wind energy industry during the last decade?

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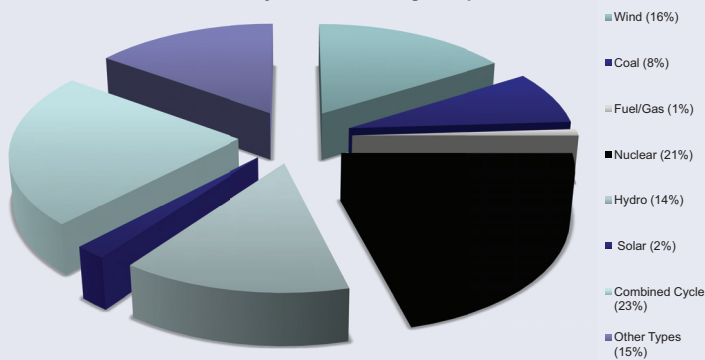
## Abstract

During the last decade, wind energy has been the fastest growing renewable source of energy worldwide. Limited sources of fossil fuel in addition to the negative effects of greenhouse gas emissions on the environment have led many countries to support development of renewable energies such as wind energy. Spain as the fourth biggest producer of wind energy plays an important global role in wind industry. In this paper, some important factors in the rapid growth of wind energy in Spain such as policy design, industry and technology, economic environment and social acceptance have been studied. The objective of this study is to introduce a model based on the successful development of wind energy in Spain which can be implemented by other countries.

## Highlights of the Spanish Wind Industry

- World's fourth largest producer of wind power by the end of 2010 with 20.676 MW installed capacity
- The third technology of the Spanish power system in 2010
- Presence in world key markets (USA, EU and Latin America)
- Equipment exports: 2.5 billion euro per year
- Investment in R&D: 200 million euro per year

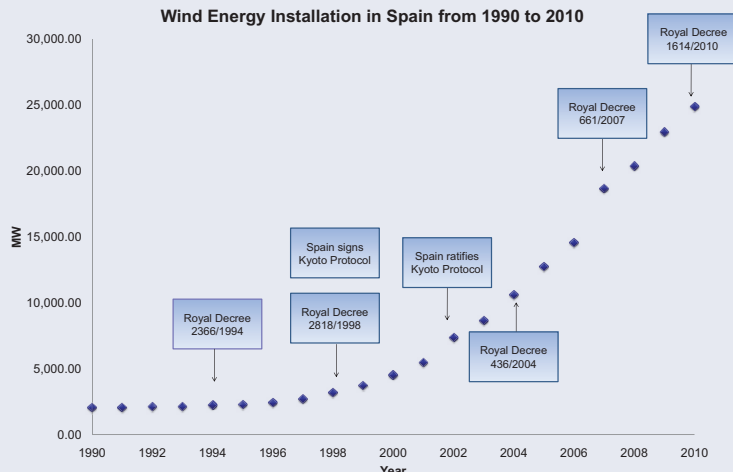
Electricity Demand Coverage in Spain 2010



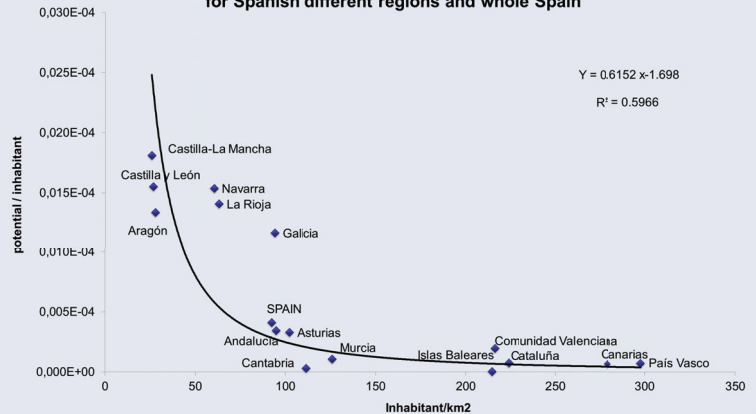
## Law & Policies

- Global policies (e.g. Kyoto Protocol)
- Governments' policies:
  - Taxes on fuel usages
  - Support to large-scale facilities
  - Clear framework for investors
- Regional policies

Wind Energy Installation in Spain from 1990 to 2010

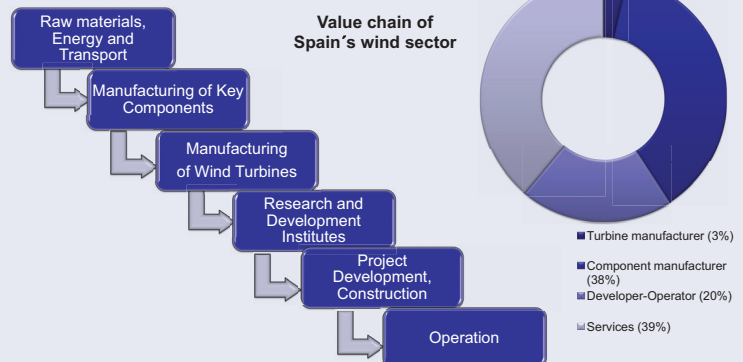


Installed wind power per km<sup>2</sup> and inhabitant for Spanish different regions and whole Spain

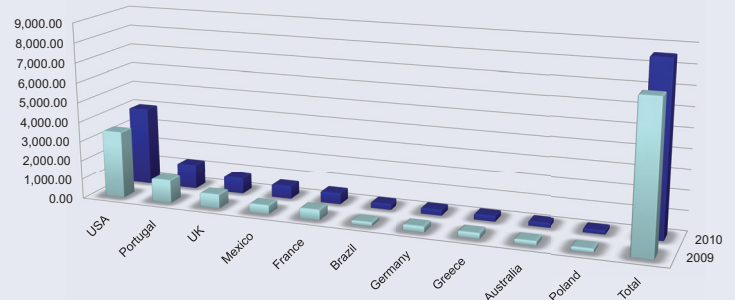


## Industry, Technology and Economic Environment

- The world first and third largest wind farm operators: Iberdrola Renovables and Acciona Energy
- The world Sixth largest wind turbine manufacturer: Gamesa
- More than 700 companies in the supply chain
- The overall contribution of €3,803 Million equal to 0.39% of Spain's GDP in 2008



Spain's wind power presence abroad (Top 10 countries by installed potential (MW) and total amount in 2009 and 2010)



## Conclusions

Spanish success in wind energy is based on:

- Government support and appropriate law framework
- High technology level
- Mature industrial value chain
- Social acceptance